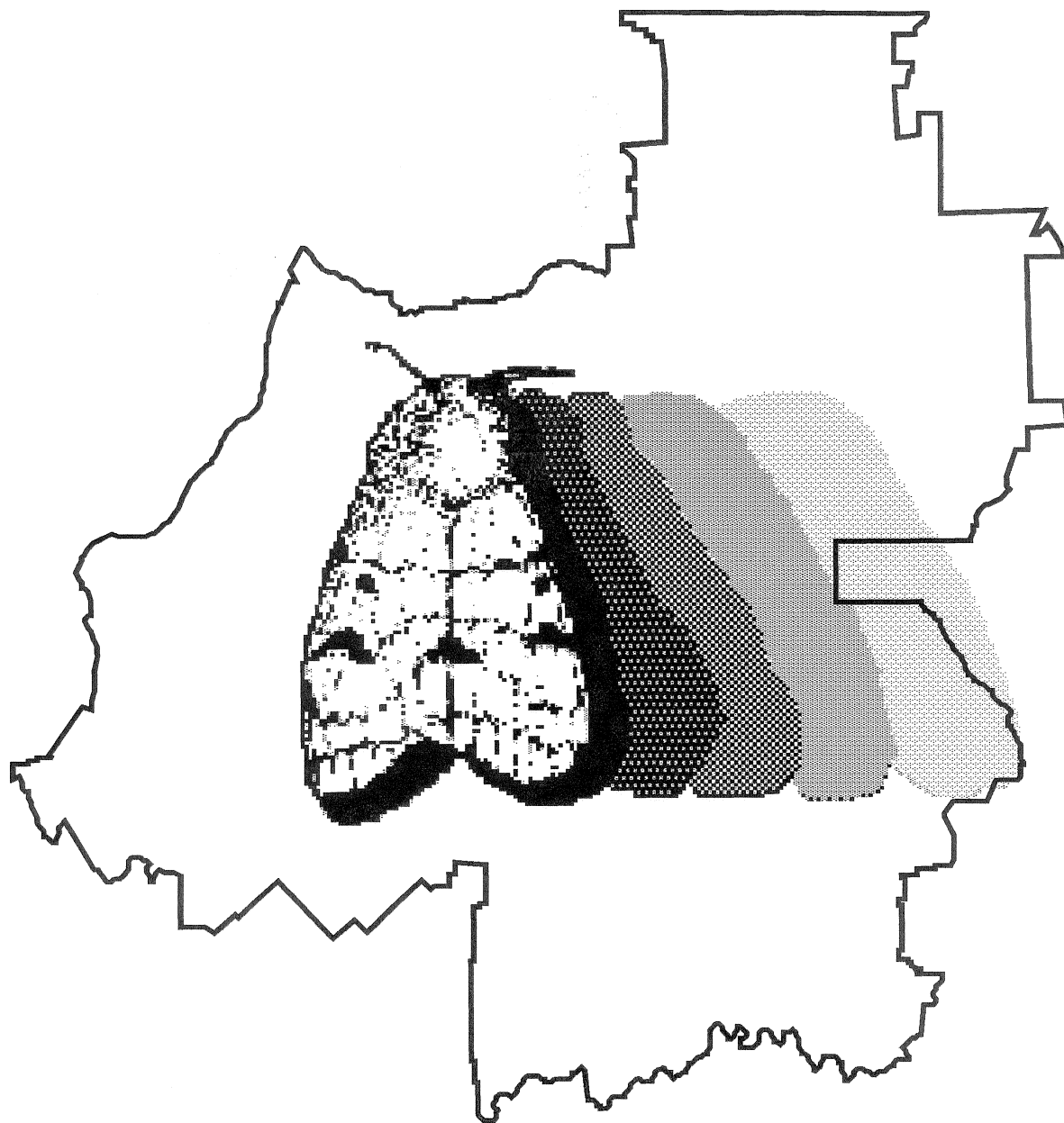


ENTOMOLOGICAL EVALUATION  
OF GYPSY MOTH POPULATIONS  
ALLEGHENY NATIONAL FOREST, PENNSYLVANIA  
1997



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# ENTOMOLOGICAL EVALUATION OF GYPSY MOTH POPULATIONS, ALLEGHENY NATIONAL FOREST, PENNSYLVANIA 1997

## SUMMARY

Egg mass densities of the gypsy moth, *Lymantria dispar* (Linnaeus), are building throughout most of the susceptible forest type on the Allegheny National Forest (ANF). Light to severe defoliation is predicted to occur over scattered areas of the Forest in the spring of 1998.

## INTRODUCTION AND BACKGROUND

Gypsy moth defoliation was first detected on the ANF in 1984. During the ten year period from 1984-1993, gypsy moth defoliation has cumulatively totaled 225,165 acres. There has been no observable gypsy moth defoliation on the ANF since 1993. Egg mass densities have remained at very low levels for the past three years.

USDA Forest Service, Forest Health Protection (FHP) has designed the gypsy moth egg mass surveys to provide information on gypsy moth infestations throughout the entire susceptible host type of the ANF (see Map 1).

## OBJECTIVES

The objectives of this biological evaluation were: 1) to accurately assess current gypsy moth population densities within the susceptible forest types of the ANF; 2) to determine the likelihood of unacceptable impacts on its forest resources occurring in the next growing season; and 3) to develop treatment alternatives and recommendations.

## SURVEY PROCEDURES

Over 600 1/40th acre plots are surveyed annually for gypsy moth egg masses throughout the susceptible forest types on the ANF. At each survey plot, a range pole (with a 6 and 3/4 inch horizontal target at a height of 5 feet) was placed at plot center; the surveyor then used a 10 BAF prism to sight on the target and establish an 18.6 foot radius plot boundary. Based on that boundary, an imaginary cylinder was extended from the ground through the canopy and all egg masses within the cylinder were tallied. The plot counts were multiplied by 40 to calculate the egg mass densities per acre.

Additional information taken at these sample plots include the approximate percentage of oak in the stand to help interpret variations in egg mass counts. Also, the general size of the egg masses and the presence of adult wasp parasites, *Ooencyrtus kuvanae* (Howard), on the egg masses were noted as an indication of gypsy moth population health. Population trends are determined by comparison of the number of old egg masses to new egg masses.

The relationship between egg mass density and subsequent defoliation intensity to host type trees (as published by David Gansner, USFS-NEFES, Radnor, PA) were used to predict the potential 1998 defoliation. Egg mass densities below 750 per acre can cause light defoliation (10-30 percent of the foliage eaten); egg mass densities of 750 to 1,500 per acre can be expected to cause moderate defoliation (30-60 percent); and those greater than 1,500 egg masses per acre can result in severe defoliation (60-100 percent).

Gypsy moth caterpillar cadavers were also collected in the area predicted to have moderate to heavy defoliation. These cadavers were brought to the lab for microscopic examination for the presence of the fungus *Entomophaga maimaiga* and the gypsy moth virus NPV.

## RESULTS

Gypsy moth populations have increased dramatically since last year. The egg masses are generally large, no parasitic wasps were observed on the egg masses and very few old egg masses were found. This indicates that the population is healthy and growing. Map 2 shows the location of areas expected to experience light to heavy defoliation in the spring of 1998. The egg mass counts averaged 640 per acre with a range of 280 - 1880 per acre for the three areas, totaling 422 acres expected to receive moderate to severe defoliation. Light to moderate defoliation is expected to occur on 3,138 acres and light defoliation is expected in other areas of the susceptible forest types within the ANF.


The fungus *Entomophaga maimaiga* was found to be present in cadavers collected from the area predicted to have moderate to heavy defoliation. No gypsy moth virus (NPV) was detected from the samples collected. The impact of the *Entomophaga maimaiga* on the gypsy moth populations will not be known until spring 1998.

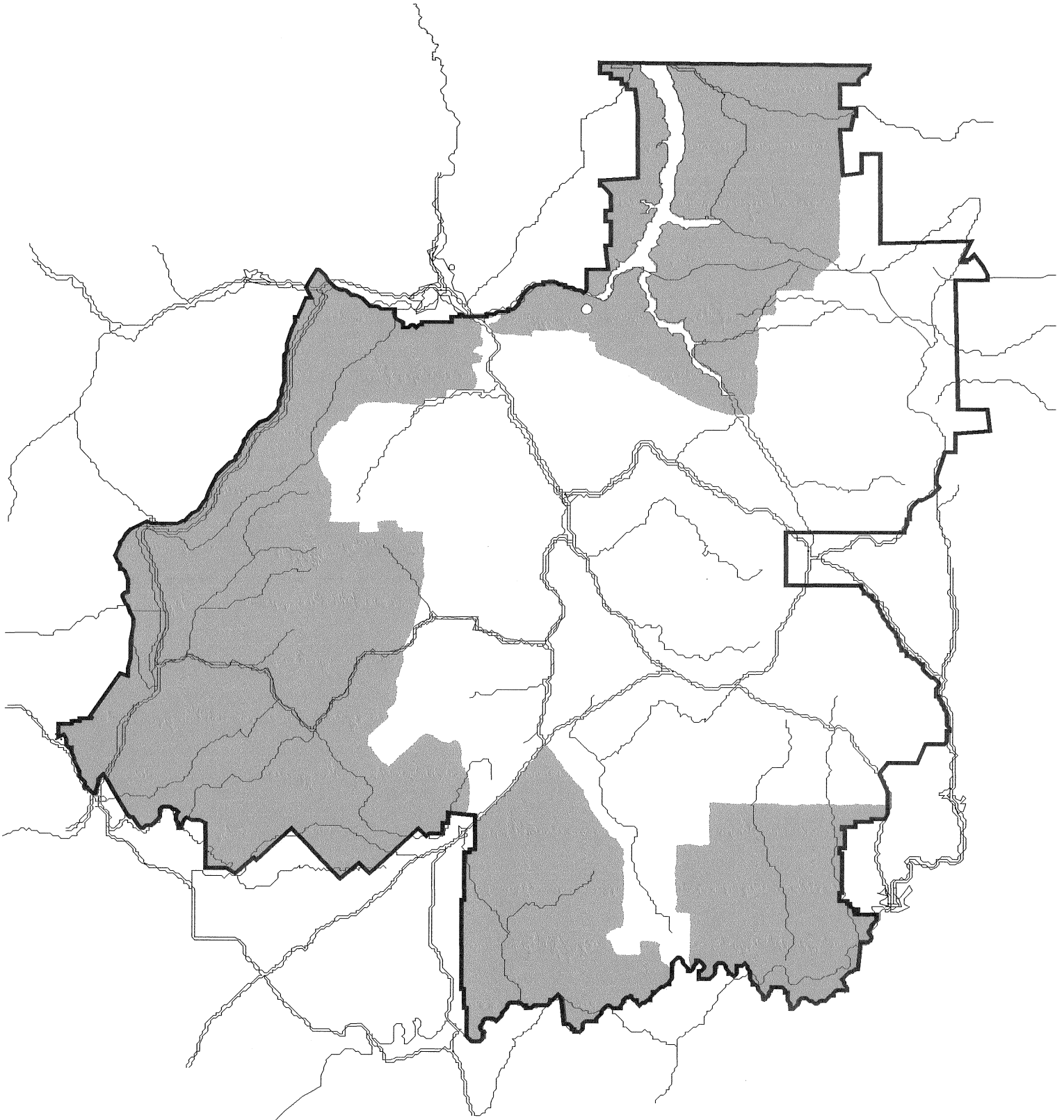
## RECOMMENDATIONS

FHP recommends no action be taken at this time. Continue monitoring gypsy moth populations through aerial defoliation and egg mass surveys during 1998.

FHP also recommends that the ANF continue to conduct monitoring for non-target moths, parasitic wasps, the gypsy moth virus NPV and the fungus *Entomophaga maimaiga*.

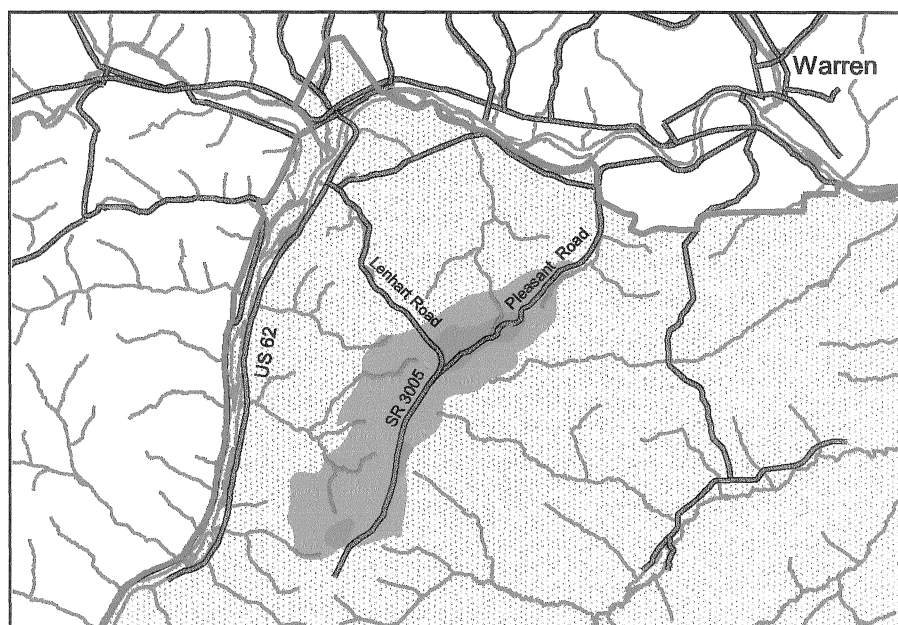
# Gypsy Moth Egg Mass Survey Area

 area surveyed



Map 1.

Allegheny National Forest  
Predicted Areas of Moderate and Severe  
Gypsy Moth Defoliation in 1998



Legend

